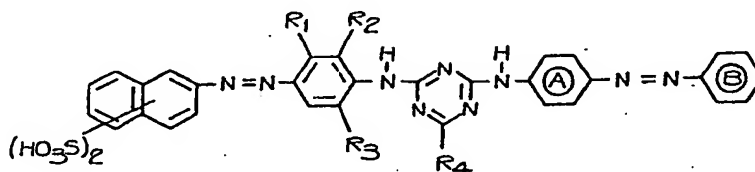


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(54) Disazo dyestuffs

(57) Dyestuffs of the formula



in which

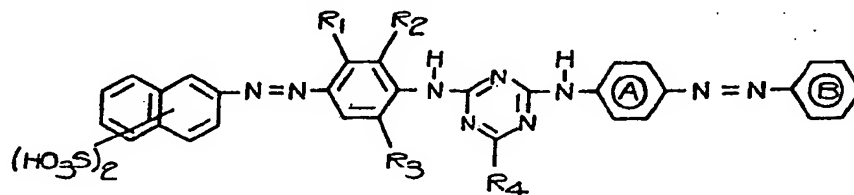
R<sub>1</sub> is H, halogen, alkoxy or acylamino,  
R<sub>2</sub> and R<sub>3</sub> are independently H, halogen, alkyl, alkoxy, or acylamino,  
R<sub>4</sub> is halogen, OR<sub>5</sub>, SR<sub>5</sub> or NR<sub>6</sub>R<sub>7</sub>, wherein  
R<sub>5</sub> is H, C<sub>1</sub>—C<sub>6</sub>-alkyl, aryl, heteroaryl, aralkyl, or cycloalkyl, and  
R<sub>6</sub> and R<sub>7</sub> are independently H, amino, optionally substituted C<sub>1</sub>—C<sub>6</sub> alkyl,  
aryl, heteroaryl, aralkyl or cycloalkyl, or together may complete a 5- or 6-  
membered hetero ring optionally containing further hetero atoms, and wherein  
rings A and B may be optionally substituted and their use for the dyeing of  
cellulose containing materials in bright yellow shades.

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**SPECIFICATION**  
**Disazo dyestuffs**

The invention relates to new yellow disazo dyestuffs of the general formula I



5 in which

$R_1$  denotes hydrogen, halogen, alkoxy or acylamino,

$R_2$  and  $R_3$  independently of one another denote hydrogen, halogen, alkyl, alkoxy or acylamino and  $R_4$  denotes halogen,  $OR_5$ ,  $SR_5$  or  $NR_5R_7$ ,

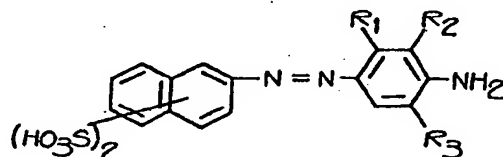
wherein

10  $R_5$  denotes hydrogen, low-molecular alkyl, aryl, hetaryl, aralkyl or cycloalkyl and

$R_6$  and  $R_7$  independently of one another denote hydrogen, amino, low-molecular alkyl, aryl, hetaryl, aralkyl or cycloalkyl, or together form a 5-membered or 6-membered ring, optionally with the inclusion of one or more hetero-atoms, in particular oxygen and/or nitrogen, it being possible for alkyl, aryl, hetaryl and aralkyl to be in turn substituted,

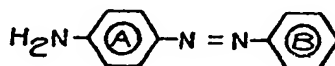
15 and in which

the rings A and B can optionally be substituted, and to a process for their preparation, characterised in that one mol of a cyanuric trihalide, one mol of an aminoazo compound of the general formula II



20 in which

$R_1$ ,  $R_2$  and  $R_3$  have the abovementioned meaning one mol of an aminoazo compound of the general formula III



in which

25 the rings A and B can optionally be substituted, and optionally one mol of a compound of the general formula IV

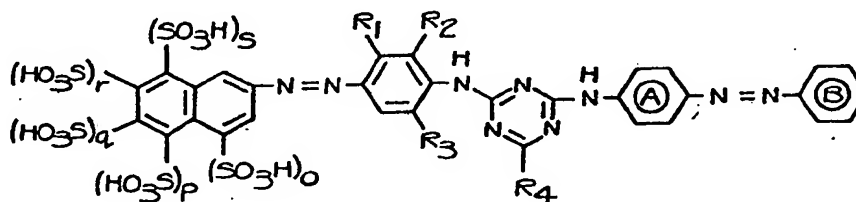


in which

$R_4$  is other than halogen,

30 are reacted with one another in any desired sequence in the presence of an acid-binding agent, the aminoazo compounds of the general formulae II and III being prepared in a known manner.

Advantageous dyestuffs are those of the general formula V



in which

35  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  have the abovementioned meaning and o, p, q, r and s are 0 or 1, but o + p + q + r + s equals 2,

and in which

the rings A and B can optionally be substituted.

Particularly advantageous dyestuffs are those of the general formulae I and V

in which

5  $R_4$ , o, p, q, r and s have the abovementioned meaning and 5

$R_1$  denotes  $\text{NHCOCH}_3$  or  $\text{NHCONH}_2$  when

$R_2$  and  $R_3$  represent H, or

$R_2$  denotes H,  $\text{CH}_3$ ,  $\text{OCH}_3$  or  $\text{OC}_2\text{H}_5$  when

$R_1$  and  $R_3$  represent H,

10 and in which 10

the rings A and B can optionally be substituted.

Very particularly advantageous dyestuffs are those of the general formulae I and V

in which

15  $R_1$ ,  $R_2$ ,  $R_3$ , o, p, q, r and s have the abovementioned meaning, 15

$R_4$  denotes OH,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_4\text{OCH}_3$ ,  $\text{NH}_2$ ,  $\text{NHC}_2\text{H}_4\text{OH}$ ,  $\text{N}(\text{C}_2\text{H}_4\text{OH})_2$ ,  $\text{NC}_2\text{H}_4\text{OC}_2\text{H}_4$ ,  $\text{NHC}_6\text{H}_5$ ,

$\text{N}(\text{CH}_3)\text{C}_6\text{H}_5$ ,  $\text{NH}(3-\text{C}_6\text{H}_4\text{SO}_3\text{H})$  or  $\text{NH}(4-\text{C}_6\text{H}_4\text{SO}_3\text{H})$ ,  $\text{N}(\text{CH}_3)\text{C}_2\text{H}_4\text{OH}$ ,  $\text{N}(\text{C}_2\text{H}_5)\text{C}_2\text{H}_4\text{OH}$ ,

$\text{NHCH}_2\text{CH}(\text{CH}_3)\text{OH}$  or  $\text{N}(\text{CH}_2\text{CH}(\text{CH}_3)\text{OH})_2$  and

the rings A and B can optionally be substituted.

Interesting dyestuffs are those of the general formulae I and V

20 in which 20

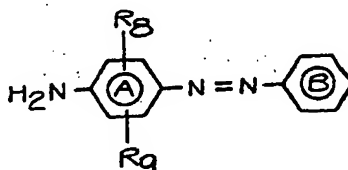
$R_1$ ,  $R_2$ ,  $R_3$ , o, p, q, r and s have the abovementioned meaning,

$R_4$  denotes  $\text{NH}_2$ ,  $\text{NHC}_2\text{H}_4\text{OH}$ ,  $\text{N}(\text{C}_2\text{H}_4\text{OH})_2$  or  $\text{N}(\text{CH}_3)\text{C}_2\text{H}_4\text{OH}$

and

the rings A and B can optionally be substituted.

25 Dyestuffs of the general formulae I and B which are prepared using compounds of the general 25  
formula VI



VI

in which

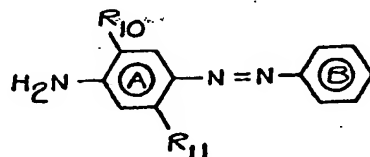
30  $R_8$  and  $R_9$  independently of one another denote H, Cl, OH,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_5$ ,  $\text{OCOCH}_3$ ,  $\text{OCOC}_6\text{H}_5$ , 30  
 $\text{OSO}_2\text{CH}_3$ ,  $\text{OSO}_2\text{C}_6\text{H}_5$ ,  $\text{CH}_3$ ,  $\text{CH}_2\text{SO}_3\text{H}$ ,  $\text{NH}_2$ ,  $\text{NHCOCH}_3$ ,  $\text{NHCOCH}_2\text{OH}$ ,  $\text{NHCOC}_6\text{H}_5$ ,  $\text{NHCONH}_2$ ,  
 $\text{NHSO}_2\text{CH}_3$ ,  $\text{NHSO}_2\text{C}_6\text{H}_5$ ,  $\text{COOH}$  or  $\text{SO}_3\text{H}$ ,

and in which

the ring B can optionally be substituted,

as compounds of the general formula III are preferred.

35 Dyestuffs of the general formulae I and V which are prepared using compounds of the general 35  
formula VII



VII

in which

40  $R_{10}$  denotes H,  $\text{CH}_3$ , Cl,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_5$  or  $\text{SO}_3\text{H}$  and 40  
 $R_{11}$  denotes H,  $\text{CH}_3$ , Cl,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_5$ ,  $\text{NHCOCH}_3$  or  $\text{NHCONH}_2$ ,

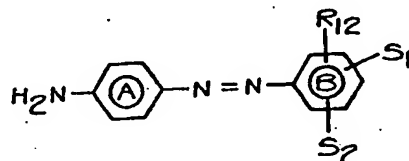
and in which

the ring B can optionally be substituted,

as compounds of the general formula III are particularly preferred.

Dyestuffs of the general formulae I and V which are prepared using compounds of the general

45 formula VIII 45



VIII

in which

$R_{12}$  denotes H, Cl,  $\text{CH}_3$ ,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_5$  or OH and

$S_1$  and  $S_2$  independently of one another denote H,  $\text{SO}_3\text{H}$ ,  $\text{COOH}$  or  $\text{CH}_2\text{SO}_3\text{H}$ ,  
and in which

the ring A can optionally be substituted,  
as compounds of the general formula III are very particularly preferred.

- 5 Particularly interesting dyestuffs are those of the general formulae I and V which are prepared  
using compounds of the general formula VIII

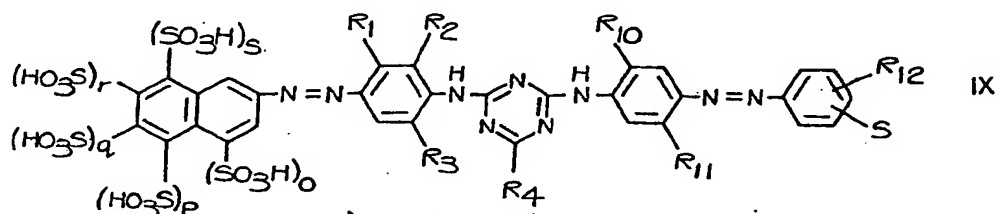
in which

$R_{12}$  denotes 4—H, 4— $\text{CH}_3$ , 4—OH or 4— $\text{OCH}_3$ , when  
 $S_1$  represents 3— $\text{SO}_3\text{H}$ , 3— $\text{COOH}$  or 3— $\text{CH}_2\text{SO}_3\text{H}$  and

- 10  $S_2$  represents H, or  
 $R_{12}$  denotes 3—H, when  
 $S_1$  represents 4— $\text{SO}_3\text{H}$ , 4— $\text{COOH}$  or 4— $\text{CH}_2\text{SO}_3\text{H}$  and  
 $S_2$  represents H,

and in which

- 15 the ring A can optionally be substituted,  
as compounds of the general formula III.  
Dyestuffs of the general formula IX



in which

- 20 o, p, q, r and s are 0 or 1, but o + p + q + r + s equals 2,  
and in which

$R_1$  denotes  $\text{NHCOCH}_3$  or  $\text{NHCONH}_2$ , when

$R_2$  and  $R_3$  represent H, or

$R_2$  denotes H,  $\text{OCH}_3$  or  $\text{OC}_2\text{H}_5$ , when

- 25  $R_1$  and  $R_3$  represent H, and

$R_4$  denotes  $\text{NH}_2$ ,  $\text{NHC}_2\text{H}_4\text{OH}$ ,  $\text{N}(\text{C}_2\text{H}_4\text{OH})_2$  or  $\text{N}(\text{CH}_3)\text{C}_2\text{H}_4\text{OH}$ ,

$R_{10}$  denotes H,  $\text{CH}_3$ , Cl,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_5$  or  $\text{SO}_3\text{H}$ ,

$R_{11}$  denotes H,  $\text{CH}_3$ , Cl,  $\text{OCH}_3$ ,  $\text{OC}_2\text{H}_5$ ,  $\text{NHCOCH}_3$  or  $\text{NHCONH}_2$  and

$R_{12}$  denotes 4—H, 4— $\text{CH}_3$ , 4—OH or 4— $\text{OCH}_3$ , when

- 30 S represents 3— $\text{SO}_3\text{H}$ , 3— $\text{COOH}$  or 3— $\text{CH}_2\text{SO}_3\text{H}$ , or

$R_{12}$  denotes 3—H, when

S represents 4— $\text{SO}_3\text{H}$ , 4— $\text{COOH}$  or 4— $\text{CH}_2\text{SO}_3\text{H}$ ,

are of very particular interest.

- 35 Examples of aminoazo compounds of the general formula II are those which are obtained by  
diazotising 2-aminonaphthalenedisulphonic acids, such as, for example, 2-aminonaphthalene-1,5-  
disulphonic acid, 2-aminonaphthalene-3,6-disulphonic acid, 2-aminonaphthalene-3,7-disulphonic acid,  
2-aminonaphthalene-4,8-disulphonic acid, 2-aminonaphthalene-5,7-disulphonic acid or 2-  
aminonaphthalene-6,8-disulphonic acid, and coupling the diazotisation products to aminobenzenes  
which are optionally substituted in the 2-position or in the 3-position, such as, for example, aniline, 2-  
40 methylaniline, 2-methoxyaniline, 2-ethoxyaniline, 2-chloroaniline, 3-acetylaniline or 3-  
aminophenylurea; the  $\omega$ -methanesulphonic acids of the abovementioned aminobenzenes can equally  
well be used as coupling components, the protective group being split off again, by treatment with acids  
or alkalis, after the coupling.

- 45 Examples of aminoazo compounds of the general formula III are those which are obtained by  
diazotising optionally substituted aminobenzenes, such as, for example, aniline, 2-chloroaniline, 3-  
chloroaniline, 4-chloroaniline, 2-methylaniline, 3-methylaniline, 4-methylaniline, 2-methoxyaniline, 3-  
methoxyaniline, 4-methoxyaniline, 2-ethoxyaniline, 3-ethoxyaniline, 4-ethoxyaniline, 2-  
aminobenzenesulphonic acid, 3-aminobenzenesulphonic acid, 4-aminobenzenesulphonic acid,  
anthranilic acid, 3-aminobenzoic acid, 4-aminobenzoic acid, 5-amino-2-hydroxybenzoic acid, 5-amino-  
50 2-methylbenzenesulphonic acid, 3-aminophenylmethanesulphonic acid or 4-  
aminophenylmethanesulphonic acid, and coupling the diazotisation products to optionally substituted  
aminobenzenes, such as, for example, aniline, 2-methylaniline, 3-methylaniline, 2-methoxyaniline, 3-  
methoxyaniline, 2-ethoxyaniline, 3-ethoxyaniline, 2-methoxy-5-methylaniline, 2-ethoxy-5-  
methylaniline, 5-methoxy-2-methylaniline, 2-aminophenol, 3-aminophenol, 2,5-dimethylaniline, 3,5-  
55 dimethylaniline, 2,5-dimethoxyaniline, 3-acetylaminoaniline, 3-methylsulphonylaminoaniline, 3-  
aminophenylurea, 1,3-diaminobenzene, 3-amino-4-methylbenzenesulphonic acid, 3-amino-4-  
hydroxybenzenesulphonic acid, 3-amino-4-methoxybenzenesulphonic acid or 3-

aminophenylmethanesulphonic acid; the  $\omega$ -methanesulphonic acids of the abovementioned aminobenzenes can equally well be used as coupling components, the protective group being split off again, by treatment with acids or alkalis, after the coupling.

5 Examples of aminoazo compounds of the general formula III are also those which are obtained by diazotising optionally further substituted 4-nitroaminobenzenes, such as, for example, 4-nitroaniline, 4-nitro-2-methoxyaniline, 4-nitroaniline-2-sulphonic acid or 4-nitro-5-methoxyaniline-2-sulphonic acid, and coupling the diazotisation products to optionally substituted hydroxybenzenes, such as, for example, phenol, salicylic acid, 3-hydroxybenzoic acid, 2-hydroxy-6-methylbenzoic acid, 2-hydroxybenzenesulphonic acid or 3-hydroxybenzenesulphonic acid, and then reducing the nitroazo compound to give the aminoazo compound. 10

Examples of aminoazo compounds of the general formula III are also those which are obtained on treating other aminoazo compounds of the general formula III with agents with which sulphonic acid radicals can be introduced, such as, for example, sulphuric acid, oleum or sulphur trioxide, an example being 4-amino-3,4'-azobenzenedisulphonic acid.

15 Examples of compounds of the general formula IV are water, methanol, ethanol, glycol, 2-methoxyethanol, phenol, thiophenol, ammonia, hydrazine, methylamine, ethylamine, dimethylamine, diethylamine, ethanolamine, diethanolamine, N-methylethanolamine, N-ethylethanolamine, glycine, N-methylglycine, taurine, N-methyltaurine, aminomethanesulphonic acid, N-methylaminomethanesulphonic acid, aniline, N-methylaniline, 3-aminobenzenesulphonic acid, 4-aminobenzenesulphonic acid, 2-aminonaphthalene-4,8-disulphonic acid, 2-aminopyridine, 2-aminothiazole, benzylamine, pyrrolidine, piperidine, morpholine, 1-amino-2-propanol and bis-(2-hydroxypropyl)-amine. 20

The reaction between the cyanuric halide, for example cyanuric fluoride, cyanuric chloride or cyanuric bromide, the aminoazo compounds of the general formulae II and III and the compounds of the general formula IV is carried out in three stages in any desired sequence, the first stage being carried out at about 0—10°, the second at about 35—50° and the third at about 80—110°C, and the acid thereby formed being neutralised with alkaline agents, such as, for example, sodium acetate, sodium bicarbonate, sodium carbonate, sodium hydroxide solution, lithium carbonate, lithium hydroxide, potassium carbonate or potassium hydroxide. 25

30 Those aminoazo compounds or compounds of the general formula IV which carry groups conferring solubility in water are advantageously reacted first. 30

The dyestuffs are precipitated from the solution by adding salt and are isolated and dried or isolated by spray-drying. In general, they are obtained in the form of salts, in particular the alkali metal salts, and preferably the sodium salts. The formulae given are those of the free acids.

35 The new dyestuffs dye cellulose-containing materials in clear yellow colour shades. 35

In the examples which follow, "parts" denote parts by weight, "percentages" denote percentages by weight and the temperature is given in degrees Centigrade.

#### EXAMPLE 1

29.5 parts of the aminoazo compound, of the general formula II, obtained from 2-aminonaphthalene-4,8-disulphonic acid and aniline are dissolved in 1,000 parts of water, and a solution of 13.5 parts of cyanuric chloride in 100 parts of acetone is added at 0°, the hydrochloric acid liberated being neutralised by adding 46.5 parts of an aqueous 20% strength solution of sodium carbonate. When the first reaction stage has ended, 22.2 parts of the aminoazo compound, of the general formula III, obtained from 3-aminobenzenesulphonic acid and 2-methoxyaniline are dissolved in 1,000 parts of water and the solution is added to the first mixture. The temperature is increased to 40° and the hydrochloric acid liberated is neutralised by adding 46.5 parts of 20% strength sodium carbonate solution. When the second reaction stage has ended, 15.2 parts of diethanolamine are added. The temperature is increased to 90°, and the mixture is then stirred at this temperature for a further 3 hours. The dyestuff is precipitated by adding 450 parts of potassium chloride and is isolated. After drying, an orange-coloured powder, an aqueous solution of which dyes cellulose-containing materials in greenish-tinged yellow shades, is obtained. 40 45 50

#### EXAMPLES 2 to 4

Very similar dyestuffs are obtained if, instead of the diethanolamine used in Example 1, 18 parts of an aqueous 25% strength solution of ammonia or 8.9 parts of ethanolamine or N-methylethanolamine are used. 55

#### EXAMPLE 5

18.6 parts of the aminoazo compound, of the general formula III, which is obtained by diazotising 4-nitroaniline, coupling the diazotisation product to salicylic acid and then reducing the coupling product are dissolved in 1,000 parts of water and the solution is reacted with a suspension of 13.5 parts of cyanuric chloride in 100 parts of water at 0°, the hydrochloric acid liberated being neutralised by adding 46.5 parts of an aqueous 20% strength solution of sodium carbonate. When the first reaction stage has ended, 29.5 parts of the aminoazo compound, of the general formula II, which is obtained 60

| Example | Compound of the general formula III,<br>obtained from          | Compound of the<br>general formula IV |
|---------|--|---------------------------------------|
| 66      | 4-aminophenylmethanesulphonic acid and<br>3-acetylaminobenzene | ammonia                               |
| 67      | 3-aminophenylmethanesulphonic acid and<br>3-acetylaminobenzene | diethanolamine                        |
| 68      | "  | ethanolamine                          |
| 69      | "  | ammonia                               |
| 70      | 4-aminobenzenesulphonic acid and<br>3-aminophenylurea          | diethanolamine                        |
| 71      | "  | ethanolamine                          |
| 72      | "  | ammonia                               |
| 73      | 3-aminobenzenesulphonic acid and<br>3-aminophenylurea          | diethanolamine                        |
| 74      | "  | ethanolamine                          |
| 75      | "  | ammonia                               |
| 76      | 4-aminobenzoic acid and 3-aminophenylurea                      | diethanolamine                        |
| 77      | "  | ethanolamine                          |
| 78      | "  | ammonia                               |
| 79      | 3-aminobenzoic acid and 3-aminophenylurea                      | diethanolamine                        |
| 80      | "  | ethanolamine                          |
| 81      | "  | ammonia                               |
| 82      | 5-amino-2-methylbenzenesulphonic acid and<br>3-aminophenylurea | diethanolamine                        |
| 83      | "  | ethanolamine                          |
| 84      | "  | ammonia                               |
| 85      | 4-aminophenylmethanesulphonic acid and<br>3-aminophenylurea    | diethanolamine                        |
| 86      | "  | ethanolamine                          |
| 87      | "  | ammonia                               |
| 88      | 3-aminophenylmethanesulphonic acid and<br>3-aminophenylurea    | diethanolamine                        |
| 89      | "  | ethanolamine                          |
| 90      | "  | ammonia                               |
| 91      | 4-nitroaniline and salicylic acid                              | diethanolamine                        |
| 92      | "  | ethanolamine                          |
| 93      | "  | ammonia                               |

| Example | Compound of the general formula III,<br>obtained from             | Compound of the<br>general formula IV |
|---------|---|---------------------------------------|
| 38      | 3-aminobenzoic acid and 2-methoxyaniline                          | ethanolamine                          |
| 39      | "   | ammonia                               |
| 40      | 5-amino-2-methylbenzenesulphonic acid and<br>2-methoxyaniline     | diethanolamine                        |
| 41      | "   | ethanolamine                          |
| 42      | "   | ammonia                               |
| 43      | 4-aminophenylmethanesulphonic acid and<br>2-methoxyaniline        | diethanolamine                        |
| 44      | "   | ethanolamine                          |
| 45      | "   | ammonia                               |
| 46      | 3-aminophenylmethanesulphonic acid and<br>2-methoxyaniline        | diethanolamine                        |
| 47      | "   | ethanolamine                          |
| 48      | "   | ammonia                               |
| 49      | 4-aminobenzenesulphonic acid and<br>3-acetylaminoaniline          | diethanolamine                        |
| 50      | "   | ethanolamine                          |
| 51      | "   | ammonia                               |
| 52      | 3-aminobenzenesulphonic acid and<br>3-acetylaminoaniline          | diethanolamine                        |
| 53      | "   | ethanolamine                          |
| 54      | "   | ammonia                               |
| 55      | 4-aminobenzoic acid and 3-acetylaminoaniline                      | diethanolamine                        |
| 56      | "   | ethanolamine                          |
| 57      | "   | ammonia                               |
| 58      | 3-aminobenzoic acid and 3-acetylaminoaniline                      | diethanolamine                        |
| 59      | "   | ethanolamine                          |
| 60      | "   | ammonia                               |
| 61      | 5-amino-2-methylbenzenesulphonic acid and<br>3-acetylaminoaniline | diethanolamine                        |
| 62      | "   | ethanolamine                          |
| 63      | "   | ammonia                               |
| 64      | 4-aminophenylmethanesulphonic acid and<br>3-acetylaminoaniline    | diethanolamine                        |
| 65      | "   | ethanolamine                          |

| Example | Compound of the general formula III,<br>obtained from | Compound of the<br>general formula IV |
|---------|---|---------------------------------------|
| 7       | 4-aminobenzenesulphonic acid and aniline              | diethanolamine                        |
| 8       | "   | ethanolamine                          |
| 9       | "   | ammonia                               |
| 10      | 3-aminobenzenesulphonic acid and aniline              | diethanolamine                        |
| 11      | "   | ethanolamine                          |
| 12      | "   | ammonia                               |
| 13      | 4-aminobenzoic acid and aniline                       | diethanolamine                        |
| 14      | "   | ethanolamine                          |
| 15      | "   | ammonia                               |
| 16      | 3-aminobenzoic acid and aniline                       | diethanolamine                        |
| 17      | "   | ethanolamine                          |
| 18      | "   | ammonia                               |
| 19      | 5-amino-2-methylbenzenesulphonic acid and aniline     | diethanolamine                        |
| 20      | "   | ethanolamine                          |
| 21      | "   | ammonia                               |
| 22      | 4-aminophenylmethanesulphonic acid and aniline        | diethanolamine                        |
| 23      | "   | ethanolamine                          |
| 24      | "   | ammonia                               |
| 25      | 3-aminophenylmethanesulphonic acid and aniline        | diethanolamine                        |
| 26      | "   | ethanolamine                          |
| 27      | "   | ammonia                               |
| 28      | 4-aminobenzenesulphonic acid and 2-methoxyaniline     | diethanolamine                        |
| 29      | "   | ethanolamine                          |
| 30      | "   | ammonia                               |
| 31      | 3-aminobenzenesulphonic acid and 2-methoxyaniline     | diethanolamine                        |
| 32      | "   | ethanolamine                          |
| 33      | "   | ammonia                               |
| 34      | 4-aminobenzoic acid and 2-methoxyaniline              | diethanolamine                        |
| 35      | "   | ethanolamine                          |
| 36      | "   | ammonia                               |
| 37      | 3-aminobenzoic acid and 2-methoxyaniline              | diethanolamine                        |



from 2-aminonaphthalene-4,8-disulphonic acid and aniline are dissolved in 1,000 parts of water and the solution is added to the first mixture. The temperature is increased to 40° and the subsequent procedure is as in Example 1. An orange-coloured powder, an aqueous solution of which dyes cellulose-containing materials in greenish-tinged yellow shades, is obtained.

#### 5 EXAMPLE 6

Very similar dyestuffs are obtained if, instead of the diethanolamine used in Example 5, 18 parts of an aqueous 25% strength solution of ammonia, 8.9 parts of ethanolamine or 10.9 parts of N-methylethanolamine are used. 5

#### EXAMPLES 7 to 96

10 If the procedure of the processes indicated in Examples 1—6 is followed and the product obtained from 2-aminonaphthalene-4,8-disulphonic acid and aniline is used as the compound of the general formula II and the compounds indicated in the table below are used as the compounds of the general formulae III and IV, yellow dyestuffs for cellulose-containing materials are likewise obtained: 10

| Example | Compound of the general formula III,<br>obtained from  | Compound of the<br>general formula IV |
|---------|--|---------------------------------------|
| 94      | 4-aminoazobenzene and 2 mols of SO <sub>3</sub><br>(4-aminoazobenzene-2,4'-disulphonic acid) | diethanolamine                        |
| 95      | "  | ethanolamine                          |
| 96      | "  | ammonia                               |

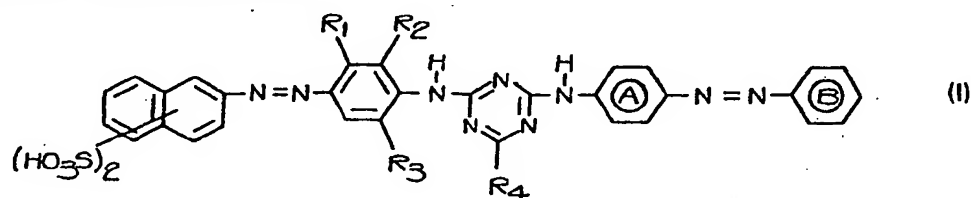
Similarly good dyestuffs are obtained using N-methylethanolamine as compound IV.

Similarly good dyestuffs are obtained if, instead of the compound of the general formula II used in Examples 1—96, those obtained from 2-aminonaphthalene-4,8-disulphonic acid and 2-methoxyaniline or 3-acetaminoaniline and 3-aminophenylurea are used.

## 5 CLAIMS

5

1. A dyestuff of the general formula



in which

R<sub>1</sub> denotes a hydrogen or halogen atom or an alkoxy or acylamino group,

10 R<sub>2</sub> and R<sub>3</sub> independently of each other denote a hydrogen or halogen atom or an alkyl, alkoxy, or acylamino group and

10

R<sub>4</sub> denotes a halogen atom or an OR<sub>5</sub>, SR<sub>5</sub> or NR<sub>6</sub>R<sub>7</sub> group

in which

R<sub>5</sub> denotes a hydrogen atom, C<sub>1</sub> to C<sub>6</sub> alkyl, aryl, hetaryl, aralkyl or cycloalkyl and

15 R<sub>6</sub> and R<sub>7</sub> independently of each other denote a hydrogen atom or an amino, C<sub>1</sub> to C<sub>6</sub> alkyl, aryl, hetaryl, aralkyl or cycloalkyl group, or together form a 5-membered or 6-membered ring, optionally with the inclusion of one or more hetero-atoms, and the alkyl, aryl, hetaryl and aralkyl groups are optionally substituted,

15

and in which

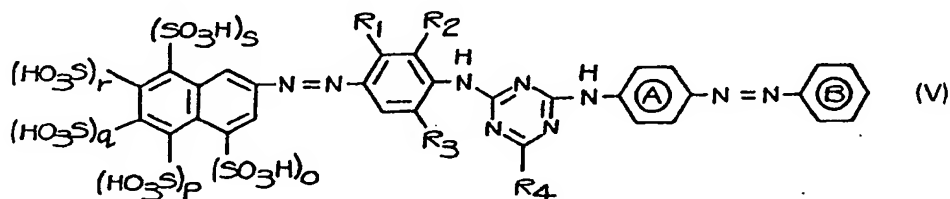
the rings A and B are optionally substituted.

20

20

2. A dyestuff according to claim 1 in which R<sub>6</sub> and R<sub>7</sub> together form a 5-membered or 6-membered ring with the inclusion of one or more oxygen and/or nitrogen atoms.

3. A dyestuff according to claim of the general formula



25 in which

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> have the same meanings as in claim 1 and

o, p, q, r and s are 0 or 1, but o + p + q + r + s equals 2,

25

and in which

the rings A and B are optionally substituted.

30 4. A dyestuff according to any of the foregoing claims in which R<sub>4</sub> has the same meaning as in claim,

30

o, p, q, r and s have the same meaning as in claim 3 and

R<sub>1</sub> denotes NHCOCH<sub>3</sub> or NHCONH<sub>2</sub> when

R<sub>2</sub> and R<sub>3</sub> denote hydrogen atoms, or

35 R<sub>2</sub> denotes a hydrogen atom or a methyl, methoxy, or ethoxy group when

35

$R_1$  and  $R_3$  denote hydrogen atoms,  
and in which

the rings A and B are optionally substituted.

5. A dyestuff according to any of the foregoing claims in which

$R_1$ ,  $R_2$  and  $R_3$  have the same meanings as in claim 1 or 4,

$o$ ,  $p$ ,  $q$ ,  $r$  and  $s$  have the same meaning as in claim 3 and

$R_4$  denotes OH, OCH<sub>3</sub>, OC<sub>2</sub>H<sub>5</sub>, NH<sub>2</sub>, NHC<sub>2</sub>H<sub>4</sub>OH, N(C<sub>2</sub>H<sub>4</sub>OH)<sub>2</sub>, N(CH<sub>3</sub>)C<sub>2</sub>H<sub>4</sub>OH, N(C<sub>2</sub>H<sub>5</sub>)C<sub>2</sub>H<sub>4</sub>OH,  
NHCH<sub>2</sub>CH(CH<sub>3</sub>)OH, N(CH<sub>2</sub>CH(CH<sub>3</sub>)OH)<sub>2</sub>, N(C<sub>2</sub>H<sub>4</sub>OC<sub>2</sub>H<sub>5</sub>), NHC<sub>6</sub>H<sub>5</sub>, N(CH<sub>3</sub>)C<sub>6</sub>H<sub>5</sub>, NH(3—C<sub>6</sub>H<sub>4</sub>SO<sub>3</sub>H)  
or NH(4—C<sub>6</sub>H<sub>4</sub>SO<sub>3</sub>H)

10 and in which

the rings A and B are optionally substituted.

6. A dyestuff according to claim 5,

in which

$R_1$ ,  $R_2$  and  $R_3$  have the same meaning as in claim 1 or 4,

$o$ ,  $p$ ,  $q$ ,  $r$  and  $s$  have the same meaning as in claim 3, and

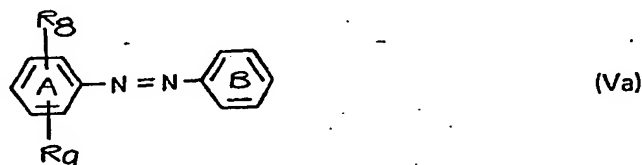
$R_4$  denotes NH<sub>2</sub>, NHC<sub>2</sub>H<sub>4</sub>OH, N(C<sub>2</sub>H<sub>4</sub>OH)<sub>2</sub> or N(CH<sub>3</sub>)C<sub>2</sub>H<sub>4</sub>OH,

and in which

the rings A and B are optionally substituted.

7. A dyestuff according to any of the foregoing claims in which the moiety consisting of rings A

20 and B and the intervening azo bridge is a radical of the general formula



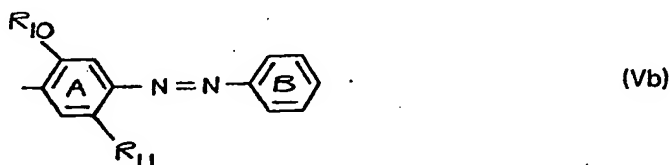
In which

$R_8$  and  $R_9$  independently of each other denote a hydrogen or chlorine atom or an OH, OCH<sub>3</sub>, OC<sub>2</sub>H<sub>5</sub>,  
OCOC<sub>2</sub>H<sub>5</sub>, OCOC<sub>6</sub>H<sub>5</sub>, OSO<sub>2</sub>CH<sub>3</sub>, OSO<sub>2</sub>C<sub>6</sub>H<sub>5</sub>, CH<sub>3</sub>, CH<sub>2</sub>SO<sub>3</sub>H, NH<sub>2</sub>, NHCOCH<sub>3</sub>, NHCOCH<sub>2</sub>OH,  
25 NHCOC<sub>6</sub>H<sub>5</sub>, NHCONH<sub>2</sub>, NHSO<sub>2</sub>CH<sub>3</sub>, NHSO<sub>2</sub>C<sub>6</sub>H<sub>5</sub>, COOH or SO<sub>3</sub>H group,

and in which

the ring B is optionally substituted.

8. A dyestuff according to claim 7 in which the radical (Va) is of the general formula



30 in which

$R_{10}$  denotes H, CH<sub>3</sub>, Cl, OCH<sub>3</sub>, OC<sub>2</sub>H<sub>5</sub> or SO<sub>3</sub>H and

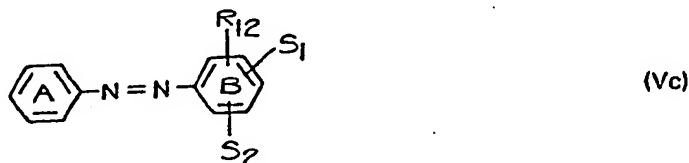
$R_{11}$  denotes H, CH<sub>3</sub>, Cl, OCH<sub>3</sub>, OC<sub>2</sub>H<sub>5</sub>, NHCOCH<sub>3</sub> or NHCONH<sub>2</sub>,

and in which

the ring B is optionally substituted.

35 9. A dyestuff according to any of the foregoing claims in which the moiety consisting of rings A

and B and the intervening azo bridge is a radical of the general formula



in which

$R_{12}$  denotes a hydrogen or chlorine atom or a methyl, methoxy, ethoxy or hydroxyl group

40  $S_1$  and  $S_2$  independently of each other denote a hydrogen atom or a SO<sub>3</sub>H, COOH or CH<sub>2</sub>SO<sub>3</sub>H group;

and in which

the ring A is optionally substituted.

10. A dyestuff according to claim 9 in which

45  $R_{12}$  denotes 4—H, 4—CH<sub>3</sub>, 4—OH or 4—OCH<sub>3</sub>, when

$S_1$  denotes 3—SO<sub>3</sub>H, 3—COOH or 3—CH<sub>2</sub>SO<sub>3</sub>H and

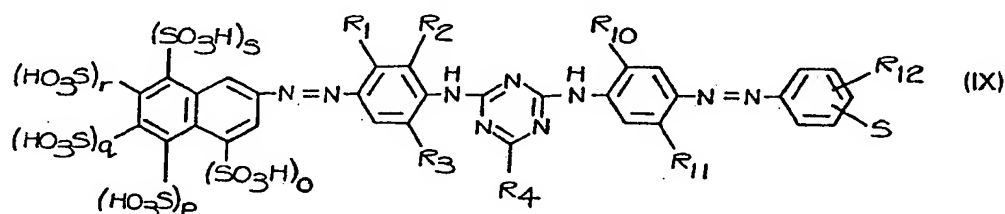
$S_2$  denotes a hydrogen atom,  
 $R_{12}$  denotes 3—H, when  
 $S_1$  denotes 4— $SO_3H$ , 4— $COOH$  or 4— $CH_2SO_3H$  and  
 $S_2$  denotes a hydrogen atom.

5 and in which

the ring A can optionally be substituted.

11. A dyestuff according to claim 1 of the general formula

5



in which

10  $o, p, q, r$  and  $s$  are 0 or 1, but  $o + p + q + r + s$  equals 2,  
 and in which

10

$R_1, R_2$  and  $R_3$  have the same meanings as in claim 4,

$R_4$  has the same meaning as in claim 6,

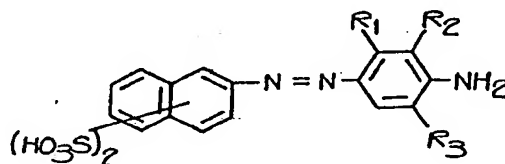
$R_{10}$  and  $R_{11}$  have the same meanings as in claim 8, and

15  $R_{12}$  and  $S$  have the same meanings as in claim 10.

15

12. A dyestuff according to claim 1 as hereinbefore specifically identified.

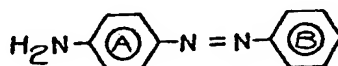
13. A process for the production of a dyestuff as claimed in claim 1 in which, per mol a cyanuric trihalide, one mol of an aminoazo compound of the general formula



20 in which

$R_1, R_2$  and  $R_3$  have the same meanings as in claim 1, one mol of an aminoazo compound of the general formula

20



in which

25 the rings A and B are optionally substituted, if  $R_4$  is other than a halogen atom, one mol of a compound of the general formula

25



in which

30  $R_4$  has the same meaning as in claim 1, other than a halogen atom, are reacted with one another in any desired sequence in the presence of an acid-binding agent.

30

14. A process for the production of a dyestuff as claimed in claim 1 when carried out substantially as described in any one of the Examples.

15. A dyestuff as claimed in claim 1 when produced by the process of claim 14.

35 16. A process for dyeing a cellulose-containing material comprising treating the material with a dyestuff as claimed in any of claims 1 to 12 and 15.

35

17. A cellulose-containing material when dyed by the process of claim 6.

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